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09/461,671	12/14/1999	PAUL WILKINSON DENT	8194-140IP2	4127

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EXAMINER	
SMITH, SHEILA B	

ART UNIT	PAPER NUMBER
2681	18

DATE MAILED: 08/23/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/461,671	DENT, PAUL WILKINSON	
	Examiner	Art Unit	
	Sheila B. Smith	2681	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on *04 June 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-50* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-14,17-33 and 36-50* is/are rejected.

7)☐ Claim(s) *15,16,34 and 35* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

1. Claims 1, 2, 3, 9, 13, 14, 19 - 22, 28, 32, 33, 38 - 41, 47 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dent (U. S. Patent Number 5,584,057) in view of Posner et al. (U. S. Patent Number 5,249,201) and further in view of Hornak et al. (U.S. Patent number 5,365,187).

Regarding claims 1, 9, 19, 20, 28, 38, 39, 47, Dent discloses essentially all the claimed invention as set fourth in the instant application, further Dent discloses use of a diversity transmission to relax adjacent channel requirements in mobile telephone systems. In addition Dent discloses a transmitter that transmits from a common antenna (25) at a plurality of radio frequencies (f1, f2), a plurality of radio channel frequency signals (A1-A8, B5-B8) that are modulated with respective information modulation, the transmitter comprising, a plurality of modulators (20, 26) a respective one of which corresponds to a respective one of the plurality of radio channel frequencies (f1-fn,f2-fn+1) each modulator generating at least one modulated drive signal (f1, f2) at the corresponding radio channel frequency from the respective information modulation such that the at least one modulated drive signal corresponds to the information modulation for the corresponding radio frequency (as exhibited in figure 2 and which reads on

column 6 lines 9-29); at least one power amplifier (21, 27) for each of the at least one modulated drive signal (f1, f2) that is responsive to the corresponding modulated drive signal to produce a corresponding amplified output signal (f1-fn,f2-fn+1) at an output thereof; a coupling network (23) that connects the outputs of the power amplifiers (21, 27) in series to produce a combined signal that is applied to the common antenna (25), such that the common antenna (25) radiates the plurality of radio channel frequency signals that are modulated with the respective information modulation (as exhibited in figure 2 and which reads on column 3 lines 1-7). However, Dent fails to specifically disclose the use of an (a) saturated power amplifier and a (b) at least one constant amplitude phase modulated drive signal.

In the same field of endeavor, Posner et al. further discloses transmission of multiple carrier signals in a non-linear system. In addition Posner et al. discloses a saturated power amplifier (as disclosed in column 3 lines 35-39).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to improve Dent by modifying a diversity transmission to relax adjacent channel requirements in mobile telephone systems with a saturated power amplifier as taught by Posner et al. for the purpose of a more power-efficient and cost effective system as well as amplifying without distortion.

The combination, however fails to disclose (b) at least one constant amplitude phase modulated drive signal.

In the same field of endeavor, Hornak et al. further discloses power amplifier utilizing the vector addition of two constant envelop carriers. In addition Hornak et al. discloses at least one constant amplitude phase modulated drive signal (as disclosed in column 3 lines 62-68).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify the combination Dent and Posner et al. with the teachings of Hornak et al. for the purpose of eliminating the phase difference between the input and output signal.

Regarding claims 2,3,21,22,40,41, Dent in view of Posner et al. discloses everything claimed, as applied above (see claim 1) however, the combination of Dent in view of Posner et al. fails to specifically disclose at least one constant amplitude, phase modulated drive signal is a single constant envelope modulation drive signal and wherein the information modulation is a constant envelope information modulation.

In the same field of endeavor, Hornak et al. further discloses power amplifier utilizing the vector addition of two constant envelop carriers. In addition Hornak et al. discloses at least one constant amplitude phase modulated drive signal (as disclosed in column 3 lines 62-68).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify the combination Dent and Posner et al. with the teachings of Hornak et al. for the purpose of eliminating the phase difference between the input and output signal.

Regarding claims 13, 32, Dent in view of Hornak et al. discloses everything claimed, as applied above (see claim 1) additionally, the combination of Dent in view of Hornak et al. disclose the coupling network (22) comprises a plurality of transformers each having primary and secondary, a respective primary (f1, f2) being coupled to a respective output of a respective power amplifier (21, 27), the secondary being coupled together to the common antenna (25) as

exhibited in figure 2. However, Dent fails to specifically disclose the use of a saturated power amplifier.

In the same field of endeavor, Posner et al. further discloses transmission of multiple carrier signals in a non-linear system. In addition Posner et al. discloses a saturated power amplifier (as disclosed in column 3 lines 35-39).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to improve Dent by modifying a diversity transmission to relax adjacent channel requirements in mobile telephone systems with a saturated power amplifier as taught by Posner et al. for the purpose of a more power-efficient and cost effective system as well as amplifying without distortion.

Regarding claims 14, 33, Dent in view of Hornak et al. discloses everything claimed, as applied above (see claim 1) additionally, the combination of Dent in view of Hornak et al. disclose the coupling network (22) comprises a plurality of quarter wavelength transmission lines each having first and second ends, a respective first end (f1, f2) being coupled to a respective output of a respective power amplifier (21, 27), the second ends being coupled together to the common antenna (25) as exhibited in figure 2. However, Dent fails to specifically disclose the use of a saturated power amplifier.

In the same field of endeavor, Posner et al. further discloses transmission of multiple carrier signals in a non-linear system. In addition Posner et al. discloses a saturated power amplifier (as disclosed in column 3 lines 35-39).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to improve Dent by modifying a diversity transmission to relax adjacent channel requirements in mobile telephone systems with a saturated power amplifier as taught by Posner et al. for the purpose of a more power-efficient and cost effective system as well as amplifying without distortion.

2. Claims 4-8,10-12,17,23-27,29-31,36,42-46,48-50 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dent in view of Posner et al. and in view of Hornak et al. and further in view of Ashby et al. (U. S. Patent Number 5,305,384).

Regarding claims 4,10,23,29,42,48, Dent in view of Posner et al. and further in view of Hornak et al. discloses everything claimed, as applied above (see claim 1) however, the combination of Dent in view of Posner et al. and further in view of Hornak et al. fails to specifically disclose the information modulation is at least one of analog voice modulation and digital data modulation.

In the same field of endeavor, Ashby et al. further discloses a apparatus system and method for transmitting secure signals over narrow spaced channels. In addition Ashby et al. discloses the information modulation is at least one of analog voice modulation and digital data modulation (as disclosed in column 14 lines 12-16).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to improve the combination of Dent in view of Posner et al. and further in view of Hornak et al. by modifying a diversity transmission to relax adjacent channel requirements in mobile telephone systems with the information modulation is at least one of analog voice modulation and digital data modulation as taught by Ashby et al. for the purpose of converting and transmitting signals.

Regarding claims 5, 24,43, Dent in view of Posner et al. and further in view of Hornak et al. discloses everything claimed, as applied above (see claim 1) however, the combination of Dent in view of Posner et al. and further in view of Hornak et al. fails to specifically disclose the analog voice modulation is analog Frequency Modulation (FM).

In the same field of endeavor, Ashby et al. further discloses a apparatus system and method for transmitting secure signals over narrow spaced channels. In addition Ashby et al. discloses the analog voice modulation is analog Frequency Modulation (FM) (as disclosed in column 3 lines 37-43).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to improve the combination of Dent in view of Posner et al. and further in view of Hornak et al. by modifying a diversity transmission to relax adjacent channel requirements in mobile telephone systems with the analog voice modulation is analog Frequency Modulation (FM) as taught by Ashby et al. for the purpose of converting and transmitting signals.

Regarding claims 6, 25, 44, Dent in view of Posner et al. and further in view of Hornak et al. discloses everything claimed, as applied above (see claim 1) however, the combination of

Dent in view of Posner et al. and further in view of Hornak et al. fails to specifically disclose the digital data modulation is at least one of continuous phase modulation (CPM) and Gaussian minimum shift keying GMSK

In the same field of endeavor, Ashby et al. further discloses a apparatus system and method for transmitting secure signals over narrow spaced channels. In addition Ashby et al. discloses the digital data modulation is at least one of continuous phase modulation (CPM) and Gaussian minimum shift keying GMSK (as disclosed in column 9 lines 20-23 and column 4 lines 7-13).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to improve the combination of Dent in view of Posner et al. and further in view of Hornak et al. by modifying a diversity transmission to relax adjacent channel requirements in mobile telephone systems with the digital data modulation is at least one of continuous phase modulation (CPM) and Gaussian minimum shift keying GMSK as taught by Ashby et al. for the purpose of converting and transmitting signals.

Regarding claims 7, 26,45, Dent in view of Posner et al. and in view of Hornak et al. and further in view of Ashby et al. discloses everything claimed, as applied above (see claim 1) however, the combination of Dent in view of Posner et al. and in view of Hornak et al. and further in view of Ashby et al. fails to specifically disclose the analog FM conforms to the AMPS cellular radiotelephone standard.

The examiner contends, however, it is well known in the art to set and conform to wireless standards and the examiner takes official notice as such.

At the time of invention, it would have been obvious to a person of ordinary skill in the art to modify the combination of Dent in view of Posner et al. and in view of Hornak et al. and further in view of Ashby et al. for the purpose of defining all the details and constraints that govern the design of transceivers used in a wireless system.

Regarding claims 8, 27,46, Dent in view of Posner et al. and further in view of Hornak et al. discloses everything claimed, as applied above (see claim 1) however, the combination of Dent in view of Posner et al. and further in view of Hornak et al. fails to specifically disclose the analog voice modulation is analog Frequency Modulation (FM).

In the same field of endeavor, Ashby et al. further discloses a apparatus system and method for transmitting secure signals over narrow spaced channels. In addition Ashby et al. discloses the analog voice modulation is analog Frequency Modulation (FM) (as disclosed in column 3 lines 39-40).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to improve the combination of Dent in view of Posner et al. and further in view of Hornak et al. by modifying a diversity transmission to relax adjacent channel requirements in mobile telephone systems with the analog voice modulation is analog Frequency Modulation (FM) as taught by Ashby et al. for the purpose of converting and transmitting signals.

Regarding claims 11,12,30,31, 49,50, Dent in view of Posner et al. and further in view of Hornak et al. discloses everything claimed, as applied above (see claim 1) however, the combination of Dent in view of Posner et al. and further in view of Hornak et al. fails to

specifically disclose the digital data modulation is at least one of linear 8_Phase Shift Keying (PSK) and Π/4 Differential Quadrature Phase Shift Keying (DQPSK).

In the same field of endeavor, Ashby et al. further discloses a apparatus system and method for transmitting secure signals over narrow spaced channels. In addition Ashby et al. discloses digital data modulation is at least one of linear 8_Phase Shift Keying (PSK) and Π/4 Differential Quadrature Phase Shift Keying (DQPSK) (as disclosed in column 5 lines 55-60).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to improve the combination of Dent in view of Posner et al. and further in view of Hornak et al. by modifying a diversity transmission to relax adjacent channel requirements in mobile telephone systems with the digital data modulation is at least one of linear 8_Phase Shift Keying (PSK) and Π/4 Differential Quadrature Phase Shift Keying (DQPSK) as taught by Ashby et al. for the purpose of converting and transmitting signals.

Regarding claims 17, 36, Dent in view of Posner et al. and further in view of Hornak et al. discloses everything claimed, as applied above (see claim 1) however, the combination of Dent in view of Posner et al. and further in view of Hornak et al. fails to specifically disclose the power amplifiers each include bilateral amplifier devices that draw current from a DC power supply and supply current to the DC power supply during operation.

In the same field of endeavor, Ashby et al. further discloses a apparatus system and method for transmitting secure signals over narrow spaced channels. In addition Ashby et al. discloses the power amplifiers each include bilateral amplifier devices that draw current from a DC power supply and supply current to the DC power supply during operation (as disclosed in column 19 lines 48-49).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to improve the combination of Dent in view of Posner et al. and further in view of Hornak et al. by modifying a diversity transmission to relax adjacent channel requirements in mobile telephone systems with the power amplifiers each include bilateral amplifier devices that draw current from a DC power supply and supply current to the DC power supply during operation as taught by Ashby et al. for the purpose of converting and transmitting signals.

Allowable Subject Matter

3. Claims 15,16, 18,34,35,37 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sheila B. Smith whose telephone number is (703)305-0104. The examiner can normally be reached on Monday-Thursday 6:00 am - 3:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Hudspeth can be reached on 703-308-4825. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

S. Smith
August 18, 2004

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